

ABSTRACT OF THE DISCLOSURE

A method of producing a photovoltaic element is provided which comprises the steps of immersing in an electrolytic solution a photovoltaic element

B 5 ^{including} ~~comprising~~ a back surface reflecting layer, a semiconductor layer and a transparent electrode layer successively stacked on a substrate, applying a forward voltage to the photovoltaic element to effect an electrolytic treatment to reduce the transparent
10 electrode layer in a short-circuit portion of the photovoltaic element, thereby selectively removing a short-circuit current path in the photovoltaic element due to a defect, wherein a voltage gradient when the forward voltage applied to the photovoltaic
15 element is lowered to 0 V or a such forward voltage as to effect no reduction reaction of the transparent electrode layer is controlled to be -15 V/s to -0.1 V/s, whereby a shunt portion is selectively removed with reliability without increasing a shunt path.

forward voltage drop time t_3 to 1.2 sec., and the voltage gradient $\Delta V/\Delta t$ ($= (0 - V_1)/t_3$) when the forward voltage was caused to drop to 0 V to -2.29 V/s, respectively. The electrical conductivity of the sulfuric acid-potassium hydroxide mixture solution was 25.0 mS/cm (25°C), and the area of the counter electrode was the same as the substrate area (50 mm × 50 mm). The negative current that flowed through the cell when the forward voltage for the electrolytic treatment was caused to drop to 0 V was -1.32 mA at the maximum and the corresponding value in terms of current density was -0.053 mA/cm^2 .

The above-described cell was thereafter taken out of the electrolytic solution bath, and the cell surface was sufficiently cleaned of the electrolytic solution with pure water. The cell was thereafter dried at 150°C for 30 minutes in a hot air oven.

Subsequently, a low-luminance open circuit voltage (low luminance V_{oc}) when the portion in the etching pattern ²⁰⁸~~28~~ area of the cell having the etching pattern formed on the transparent electrode layer 207 by the above-described steps (1) to (5) was irradiated with light at an illuminance of 200 lux from a fluorescent lamp was measured and a visual inspection of the appearance of the cell was made. After the measurement of the low-luminance V_{oc} , an electrode formed as the current correcting grid